Stream Team Minutes
January 30, 2007

Attendance:

Mary Weidel, US Army Corp of Engineers
Jim Selegean, US Army Corp of Engineers
Chris Freiburger, DNR
Joe Rathbun, DEQ
John Suppnick, DEQ
Ralph Reznick, DEQ
Bryan Burroughs, MSU
Bethany Matousek, DOT
Coreen Strzalka, DOT
Dave Fongers, DEQ
Mike Townley, DOT
Sean Duffy, NRCS
Cyndi Rachol, USGS
Kristine Boley-Morse, Calhoun Co.
Jessica Mistak, DNR
Heather Rawlings, USFWS
Susan Wells, USFWS
Kyle Kruger, DNR

Update on Reference Curve Project

Cyndi and Kristine gave an update on the reference curve project. Seven sites have been fully surveyed. A reconnaissance has been completed at 30 additional sites and 15 of these appear suitable for reference curve study purposes. Forty eight additional sites have passed an office screening for acceptability. Other agency staff wishing to contribute to the project should review the lists of screened sites and tell Cyndi which locations they are interested in surveying. The reconnaissance team for all sites will include Kristine and Cyndi for continuity in the methodology for finding the bankfull. **A revised list of screened sites will be provided to the Stream Team by Cyndi.**

Jessica will be surveying several sites next summer and **will coordinate site selection with Cyndi.** Jessica's tentative list is attached.

The Army Corp of Engineers will be conducting geomorphology studies on the Boardman River next summer and may also include a reference reach in their surveys which could possibly be added to the reference curve database.

Changes to the Protocol

It was decided that the pebble count protocol will not be changed except that pebbles outside of the wetted channel will be tallied separately from pebbles in the wetted channel. A review of selected pebble count data collected so far for the project revealed a small increase in the D_{50} and D_{85} when bank pebbles were excluded from the analysis. The increase however did not appear to be of sufficient magnitude to effect stream classifications that would be based, in part, on the pebble count data.

Kristine and Jessica both encountered reaches with islands last summer. Kristine avoided the island when defining the reach boundaries but this shortened the reach. Jessica surveyed through the portion of the reach that contained the island by following the biggest channel while avoiding the island when setting cross sections. It was decided that

the protocol should be modified to address islands in the reach. **John Suppnick will draft a proposed modification to the protocol for these cases (draft attached).**

Jessica also asked what guidance the group could give for sites where the survey reach cannot encompass the gage location and how far downstream would be too far from the gage. The consensus was that as long as the flow did not increase significantly in the surveyed reach compared to the gage location and as long as the downstream reach elevations were tied to the gage datum there would be no problems with the gage being outside of the surveyed reach.

Presentation on Dam Removal in Michigan

Bryan Burroughs of Michigan State University, Department of Fish and Wildlife (burrou15@msu.edu 517-353-6697) presented his research on dam removals in Michigan. The results will be available on the MSU and DNR websites soon. His research included 10 years of channel morphology and fish monitoring on the Pine River at the former Stronach Dam site and several other locations in Michigan where dams had been removed up to 39 years previously. Some of the major findings were that:

- Channels are reformed in former impoundments relatively quickly (within about 10 years) but the new channel does not necessarily go back to the original channel and does not usually reform meanders through time.
- Some substrate coarsening occurs quickly following dam removal, but full coarsening and diversity of substrate sizes may take decades to recover.
- The upstream extent of channel erosion following dam removal can be predicted by the bed forms present before dam removal. The amount of sediment eroded from former impoundments can also be readily predicted.
- Fish diversity and productivity increase following dam removal.

Training Plans

The Channel Morphology II class scheduled for June 2007 in Lansing was discussed. It was decided that only 1 social event would be planned. The prerequisite for attending the class will be that the candidate should be able to answer a series of questions affirmatively. The questions will be designed to determine the candidates experience and knowledge of basic channel morphology science and measurement techniques.

Web Page

The question of what to include on the Stream Team web page was discussed. **Cyndi, Ralph and Dave will devise a strategy to address this in a way that is compatible with the Stream Team's mission and does not become too large of a document management burden for the website manager (currently Dave Fongers).**

Other Issues

Dave reported that his draft evaluation of flashiness trends in Michigan has been reviewed by several parties and he is in the process of updating this analysis to address comments received.

Kristine reported that a Battle Creek River monitoring summit will occur on March 8, 2007 at a place to be determined.

The next stream team meeting will be March 7, 2007 at the Horatio S. Earle Learning Center, Michigan Department of Transportation, Dimondale, Michigan.

Prepared by: John Suppnick
Water Bureau
MDEQ
2-16-07

Suggested edit for protocol document
Drafted by John Suppnick

On Page three of the protocol document add a bullet under the existing heading "At the Gage Site – Study Reach"

- Major islands should be avoided in the study reach by moving upstream or downstream as necessary to exclude the island from the reach. Streams that are naturally braided should not be selected for study since this could indicate instability due to recently increased sediment load. Small islands that are usually submerged completely during high flow may be included in the reach if a good alternative reach is not available. In this case cross sections should be selected so as not to include the island. The longitudinal profile should follow the deeper of the two channels. If time permits the longitudinal profile can include both channels. If moving the reach to avoid islands puts the gage outside of the study reach then you should verify that the stream flow in the study reach is the same as at the gage (no significant tributaries enter between the gage and the study reach) and be sure to tie all elevations in the study reach to the gage datum.

Jessica Mistak's Proposed Regional Curve Measurement Sites- 2007

Final selection will be after coordinating with Cyndi Rachol and Kristine Boley-Morse

Date	Gage #	Gage Description	Staff	Notes
May 1-4	04159492	Black River near Jeddo	J. Mistak K. Kruger	Discharge may be high at this time. Average monthly discharge for May = 318cfs
May 1-4	04159900	Mill Creek near Avoca	J. Mistak K. Kruger	Average monthly discharge for May = 114 cfs
July 16-20	0406000	Black River near Garnet	J. Mistak D. Kramer	
July 16-20	04049500	Manistique River at Germfask	J. Mistak D. Kramer	Question on recoverable datum and wadeability
July 16-20	04059400	Ten Mile Creek at Perronville	J. Mistak D. Kramer	Need to make sure channel is not armored or bedrock
July 16-20	04057510	Sturgeon River near Nahma Junction	J. Mistak D. Kramer	

Michigan Stream Team Meeting Minutes
April 11, 2007

Attendees:

Ralph Reznick	Dave Fongers
Joe Haas	Cyndi Rachol
Joe Rathbun	Steve Rheaume
Coreen Strzalka	Mike Townley
Mary Weidel	John Suppnick
John Suppnick	Susan Wells
Jim Selegean	David Bidelspach
Chris Freiburger	Michael Geenen
Kyle Kruger	Sarah McIlroy
Julia Kirkwood	Kristine Boley-Morse
Ian Chisholm	Sharon Hanshue
Karl Koller	Laura Wildman

Commitments/Action Items:

Joe R. will be writing the first draft of a quality assurance plan for the regional reference project, with assistance from **Kristine** and **Cyndi**. This will be completed by the end of May.

Next meeting:

To be announced: late May or early June

Meeting Minutes

The meeting was held at the MDEQ Office in Lansing. Introductions were made, and the meeting proceeded through the agenda.

Item 1 – June Morphology Training Update

Ralph and **Chris** talked about the State's budget situation, and noted that DEQ, DNR, and MDOT staff won't be allowed to attend the course. US Fish and Wildlife staff won't be able to attend, either. It was decided to postpone the training, and hope to offer it at a later date, presumably in the next fiscal year. **Chris** sent an email to all those who signed up for the training, notifying them of the postponement.

Kristine noted that there may be some grant money from Consumer's Energy available to fund training at some point (up to $6,000).

Item 2 – Web Page Recommendations

Dave F. lead a discussion about the content of the Team web page, and the following was decided:

- Some items under "Related Links" will be moved to "Resources"
- We won't post things that are readily available elsewhere (e.g., via a Google search)
- He'll add other training options under "Resources", and note that the training we were sponsoring in June has been postponed

Item 3 – Protocol Document Change – Measurements Around Islands

John wrote a paragraph for the field protocol describing how to conduct measurements around islands and in braided channels. Minor changes were suggested, and the paragraph was accepted.

Chris asked that identification of valley type be added to the protocol. It was agreed that this is a good idea but will require further discussion, and will be discussed at the next Team meeting.

Jim noted that the Army Corps can support the reference curve project, either financially or by assisting with the field work. This will be discussed further at the next Team meeting, as 2007 field plans develop.

Item 4 – Database for the Regional Reference Curve Project

After some discussion lead by **Cyndi**, **Chris**, **Ralph** and **Dave B.** of Stantec, it was decided that RiverMorph will be used to store the data from the reference curve project.

Prior to the next item, about 20 MDEQ-LWMD floodplain engineers, transportation engineers, and MDOT engineers, joined the meeting.

Item 5 – Presentation on 3-D Stream Modeling

David Bidelspach of Stantec (Raleigh, NC) gave a presentation on 3-D stream modeling for river restoration projects, followed by a shorter presentation on HEC-RAS. **Dave F.** added Mr. Bidelspach's presentation to the Team website, and sent the following message to the Team:

"This morning's 3D modeling presentation has been added to the Internet at http://www.michigan.gov/documents/deq/mist-meeting-042007-3d-design_193004_7.ppt. It is linked from the Meetings page of the Stream Team website,

www.michigan.gov/streamteam. Per Dave's request, one name has been removed from the presentation. It has also been run through software that reduces the file size from 24 MB to 5 MB, although the changes should not be noticeable."

David B. also briefly discussed North Carolina's stream mitigation program, the North Carolina Ecosystem Enhancement Program. Details are available at:

http://www.nceep.net/

The stream restoration monitoring guidance he mentioned is at:

http://www.nceep.net/business/monitoring/Monitoring_report_web/Projects_in_Monitoring.htm

David B.'s contact information is:

919-218-0864
david.bidelspach@stantec.com

Item 6 – Items of Importance from Those in Attendance

This was not addressed during the meeting, but **Joe R.** has the following items:

- MDEQ is requiring a quality assurance project plan (QAPP) for the regional reference curve project. **Joe R.** proposes to write a first draft, drawing heavily from our field protocol document, and asking interested members of the Team to review it (**Kristine** and **Cyndi**, minimum). A first draft must be completed by the middle of May.
- The University of Wisconsin's 2 ½ day dam removal short course will be held at the Kellogg Center in E. Lansing, November 5-7.

Next Meeting:

The next Stream Team meeting will probably be in late May or early June, though a specific date was not selected due to the State's continuing budget situation.

(Recorded by Joe Rathbun, MDEQ)

Michigan Stream Team Meeting Minutes
July 18, 2007

Attendees:

Ralph Reznick
Joe Haas
Joe Rathbun
Coreen Strzalka
John Suppnick
Jim Selegean
Chris Freiburger
Kyle Kruger
Rick Westerhof
Dave Fongers
Cyndi Rachol
Steve Rheaume
John Suppnick
Susan Wells
Kathy Ryan
Kristine Boley-Morse
Sharon Hanshue

Commitments/Action Items:

- **Cyndi** and **Kristine** will calculate coefficients of variation for data collected at the 3 transects surveyed at each location, to assess if we can cut back to 1 transect. (Accomplished)
- **Susan** will send out a draft RFP for the Open Rivers Initiative, and **Sharon** will organize a meeting to brainstorm potential projects. (Both of these have been accomplished.)
- **Coreen** will identify a new contact person for the drain commissioners.
- **Joe R.** will compile suggestions for choosing ungaged survey locations, and summarize them at the next meeting. Team members should send suggestions to rathbunj@michigan.gov.

Next meeting:

Wednesday August 22, 9:00-12:00, US FWS offices, Lansing

Meeting Minutes

The meeting was held at the US FWS Office in Lansing. Introductions were made, and the meeting proceeded through the agenda.

Item 1 – Regional Reference Curve Project Update

Cyndi and **Kristine** passed around a handout summarizing their progress as of July 2007. Two sites had been surveyed (Black River near Garnet and Looking Glass River near Eagle), and another 11 locations had been reconned. Three of the recon sites were eliminated as entrenched or not wadeable. They noted it was a wet spring, but rivers in much of the state are low now.

Several issues about stations were discussed:

- It was decided to survey the upper Clinton River even though there may not be many other nearby stable sites; these data might be combined with Annable's 1996 data for southern Ontario.
- Data from Augusta Creek, gathered during the Stream Team's initial training a couple of years ago, will be included in the curve database.
- Other surveying teams will survey stations this field season
    - **Chris** & **Jessica** & **Kyle**
    - **Heather** and colleagues
    - **Jim** will survey 7 sites on the Boardman River, only one of which is gaged.
- **Ralph** asked how to handle new sites that haven't yet been reconned. It was agreed that **Kristine** will recon these sites prior to them being surveyed – except for UP streams that **Jessica** can recon and survey at her discretion.
- **Jessica** is surveying the Black River near Garnet in the UP; a repeat of an earlier survey by Cyndi and Kristine.

Dave will update the list of surveyed and reconned stations and put it on the Stream Team website.

Item 2 – Quality Control for Regional Reference Curve Project

The discussion swung to survey QC and resurveyed sites. The QAPP calls for 10% of the sites to be surveyed a second time by a different crew, which equates to around 5 sites total. It was decided that a full second survey will be performed, starting with the second survey crew selecting the reach to be surveyed without knowing what reach the first crew surveyed. Everything will be new – bankfull indicators, transects, etc. **John** commented that documenting the two independent identifications of bankfull indicators will be very important since so many of the other measurements follow from that.

Joe H. noted that benchmarks made with magnetized survey nails are easier to find with a metal detector than ordinary nails or benchties. They're available from Forestry Suppliers (www.forestry-suppliers.com) in lengths ranging from !" to 6". The 4" and 6" nails are $55 for 30-pound boxes containing around 885 and 362 nails, respectively.

The issue of surveying 3 transects per station vs. 1 transect was revisited. **Cyndi** and **Kristine** will calculate coefficients of variation (CVs) for the measurements made on the transects (width, depth, cross-sectional area, pebble count data), and we may cut back to 1 transect per station if the CVs are low enough. An alternative to making all the measurements at 1 vs. 3 transects would be to shoot width and thalweg depths at 3 transects but not measure area or do pebble counts; this would save a lot of time while still providing data on the variability of two important measurements.

Kristine noted that the status of MSU buying a total station is still uncertain. Obtaining a total station is not a requirement of the grant.

Item 3 – US FWS Money for Indiana and Ohio Sites

Heather stated that money ($10,000) is in place to survey 4 locations on the St. Joseph River in the southeastern part of the state, and that we have a couple of years to use it.

Item 4 – US FWS Open Rivers Initiative (ORI)

Susan discussed the ORI. In outline:

- Over the last 8 years US FWS funded a National Fish Passage Program, to the tune of $2M in 1999 and $5M in 2006. This program provided some money plus technical assistance and partnering opportunities to fish passage projects. Much of the money has been spent on Great Lakes tributaries, and the local FWS region (Region 3) has partnered on 56 projects since 1999 ($1.9M). Most of the project funding has come from partner organizations (76% overall, to date).
- Current budget proposals will add an extra $6M in FY 2008 to the ORI. The focus will be on small dams, though culverts, fishways, and temperature and velocity barrier projects will also be eligible for funding. Money can be used for monitoring; pre & post, ongoing, barrier inventories, etc. The money will also fund 1 or 2 "national engineer" positions.
- US FWS contacts for the ORI = **Susan** for tributaries to Lakes Huron and Erie; **Rick Westerhof** for Lake Michigan, and **Glen Miller** for Lake Superior.
- **Susan** also mentioned the Fish Passage Decision Support System (http://fpdss.fws.gov/).
- If these extra funds are provided, US FWS will be looking for assistance in identifying priority projects or geographic areas, and with reviewing proposed projects. To that end, **Susan** has sent out the Fish Passage Program RFP, and **Sharon** has scheduled a meeting of interested Team members to discuss potential projects (*Thursday August 16 at the MDNR's Mason Building in Lansing, from 10-12 AM).*

Item 5 – Issues of Importance from Those in Attendance

Dave has made modifications to the Stream Team website:

- Make the minutes a single document, divided by year
- Provide just a pdf version of the minutes, and drop the Word version

Ralph noted that another consultant has asked to join the Team. An option for dealing with consultants would be to let them attend but not allow them to be members of the Team. **Dave** noted that, currently, only members get the Team

emails. **Dave** also suggested we could start a blog for geomorphology issues in Michigan on the Stream Team website similar to the hydrology blog http://www.michigan.gov/deq/0,1607,7-135-3313_3684_3724-132242--,00.html.

It was noted that **Abby Eaton** is no longer available to the Team as a contact to the drain commissioners. **Coreen** volunteered to identify a new contact person. It was also noted that the drain commissioners are sponsoring a 2-day stream geomorphology course at the end of July, taught by 2 consultants; the Spicer Group and Wetland Coastal Resources.

Kathy mentioned that NRCS is hiring an engineer to assist Northern Lower Michigan RC&Ds with various projects, including rapid watershed assessments now required by MDEQ's NPS program. Geomorphology training of conservation district staff in her area (northern Lower Peninsula) would be very useful, and that may be conducted in Michigan by NRCS's national training staff.

Kathy also noted that NRCS is coming out with a new edition of the stream restoration manual, and she'll let us know when it's on-line.

Jim brought up surveying in deep streams and pools, and it was agreed that belly boats/float tubes are the way to access those sites.

Chris and **Ralph** noted that the "meanders project" on the Dowagiac River is complete. This project reconnected a formerly dredged channel to its original meandering channel. A similar project is scheduled for the Battle Creek River near Charlotte, later this year.

Steve and **Chris** mentioned that the dam on the Grand River in downtown Lansing is drawn down from late July to late August, for repairs. Reactions to the lower water levels (exacerbated by the recent draught) by local citizens is said to be mixed. There is some discussion of leaving the water levels down into September for a river cleanup.

Joe R. asked for input on deciding how to select ungaged streams for reference curve surveying. He will collect all suggestions and present them at the next Team meeting. Send suggestions to rathbunj@michigan.gov.

Joe R. also reminded everyone that the University of Wisconsin's 2½ day dam removal short course will be held at the Kellogg Center in E. Lansing, November 5-7. **Ralph** and **Sharon** are among the speakers. UW has offered a discount on registration if MDNR + MDEQ send 8 people. Further information on the course is available at the UW website:
http://epdwww.engr.wisc.edu/courses/course.lasso?myCourseChoice=J460

Next Meeting:

The next Stream Team meeting will be on August 22, from 9:00 to 12:00 at the US FWS offices in Lansing.

(Recorded by Joe Rathbun, MDEQ)

Michigan Stream Team Meeting Minutes
August 22, 2007

Attendees:

Ralph Reznick	Cyndi Rachol
Joe Rathbun	Susan Wells
Coreen Strzalka	Kristine Boley-Morse
John Suppnick	Andrea Ania
Chris Freiburger	Dan Rockafellow
Kyle Kruger	Bethany Matousek
Rick Westerhof	Sean Duffy
Mary Widell	Heather Rawlings

Commitments/Action Items:

- **Joe R.** will produce a list of locations where DEQ has recently found the macroinvertebrate communities to be in "excellent" condition, for possible use in the regional reference curve project. This will be completed by Thanksgiving.
- **Cyndi** will try to get Ohio USGS's regional reference curve data to assess the variability of their cross-channel transect data.
- **Kristine** will look over the Geomorph 101 course materials and work to reduce them to a 1 to 2-day course for Team members to teach.

Next meeting:

Tuesday October 16, 9:00-12:00, NRCS offices, Lansing

Meeting Minutes

The meeting was held at the US FWS Office in Lansing. Introductions were made, and the meeting proceeded through the (rearranged) agenda.

Item 1 – Open Rivers Initiative

Susan led a discussion of the US FWS's Open Rivers Initiative. Pertinent points:

- The President has not yet signed the funding bill.
- Project submittals are due by September 1.
- **Chris** asked that US FWS get him a list of proposed projects.
- Historically funds have been available around January 1, but lately it's been closer to mid-summer.

- Grants are usually for 2 years (from the date of award), though extensions are possible. Projects that can be completed in 2 years are therefore a priority.
- **Ralph** reported that he got 4 or 5 proposals from the DEQ district staff, and had passed them on to **Susan**.
- In the last week of August staff from MDOT, DNR and DEQ will talk about dams and other fish passage issues.

Coreen noted that MDOT has been inventorying culvert condition on state roads. They've started in the Saginaw Bay area and will expand the program statewide.

Joe R. noted that DEQ's road/stream crossing inventory might contain useful information; stream conditions at thousands of culverts and bridges across the state have inventoried over the last decade, and in recent years an effort was made to document details of the culvert or bridge.

Dan discussed the proposed Dexter dam removal project, and got feedback from **Susan** on who can submit the proposal.

Coreen started a discussion on velocity barriers to fish passage. Pertinent points:

- The velocity that creates a barrier to fish passage depends on the species, though typically it's around 3 to 4 cfs, which often approximately matches the 2-year event.
- MDOT culverts are usually sized to pass the 50 or 100-year event.
- This may create overwide channels, however, in which case the baseflow channels are too shallow.

Item 2 – Measurements at Ungaged Stream Locations

At the last meeting **Joe R.** asked for suggestions on how to select regional reference curve locations that aren't at USGS gages. He summarized two possible approaches:

- Locations where the biota (probably macroinvertebrates, since there is more data for them than for fish in most watersheds) have recently been surveyed and found to be "excellent".
- Locations between two gages where the hydrology is known to be stable.

After some discussion of the biota idea and a review of the current list of surveyed and upcoming regional reference curve (RRC) project stations, **Joe R.** agreed to produce a list of appropriate locations from the DEQ biosurvey database, by Thanksgiving.

Item 3 – Drain Commission Participation on Stream Team

Coreen reported that Steve May, the Lenawee County Drain Commissioner and chair of the state drain commissioner organization, is interested in having a drain commissioner (not a consultant) attend our meetings.

Item 4 – Surveying 3 Transects or 1 in Each Survey Reach

Our RRC survey protocol calls for surveying 3 cross-channel transects at riffles, and the question was whether to reduce that to 1. Pertinent discussion points:

- Most RRC projects in other states survey 1 transect per station.
- Ohio did up to 4 transects per station, and **Cyndi** said she'd try to get their data and summarize it for us.
- Data from our early RRC stations showed moderate variability in depths and widths, and sometimes higher variability in the pebble count data.
- **Chris** noted that Tamara McCandless in Maryland surveys a single transect at the narrowest riffle, reasoning that it's better to design a channel that's a little too narrow than too wide, since aggradation is a bigger problem than a little degradation.

After some discussion and an informal vote, it was decided to include a discussion of the multiple transect data in the final report, and cut back to a single cross-channel transect at a riffle (plus others as time allows) at all future RRC stations.

Item 4 – Winter Activities for the Stream Team

Ralph led a discussion of activities and objectives for this winter. Major activities include:

- **Kristine** and **Cyndi** will be processing the 2007 RRC data.
- Other staff should get survey data to them as soon as possible after it's collected.
- Training: we hope to conduct the Geomorph #2 class in 2008, budgets allowing. We should also get serious about organizing a 1 to 2-day course that would be taught by Team members. **Kristine** said she'd look over Sandy and Luther's 101 course materials and get back to the Team with a reduced course outline.

Item 5 – Issues of Importance from Those in Attendance

- **John** passed around some materials on the Stream Stability Index and asked if anyone had ever used it. No one had.
- **Joe** noted some recent work on using tractive force calculations to assess stream stability, and will talk about that more at the next meeting.

Next Meeting:

The next Stream Team meeting will be on Tuesday October 16, from 9:00 to 12:00 at the NRCS offices in Lansing.

(Recorded by Joe Rathbun, MDEQ)

Michigan Stream Team Meeting Minutes
October 16, 2007

Attendees:

Ralph Reznick	Bethany Matousek
Joe Rathbun	Cyndi Rachol
John Suppnick	Susan Wells
Frank Cousin	Kristine Boley-Morse
Kathleen Ryan	Andrea Ania
Kyle Kruger	Jim Selegean
Andrea Paladino	Dave Fongers
Mary Widell	Jessica Mistak
Pat Fowler	Heather Rawlings

Commitments/Action Items:

- **Joe R.** will produce a list of locations where DEQ has recently found the macroinvertebrate communities to be in "excellent" condition, for possible use in the regional reference curve project. This will be completed by Thanksgiving. ***[See note, below]*** Joe will also make a short presentation on some channel stability assessment tools at the next meeting.
- **Kristine** will compare their data to Jessica's for the UP river they both surveyed, and present the results at the December meeting.
- **Kristine** will summarize some training options and present them at a future meeting.

Next meeting:

Wednesday, December 5, 9:00-12:00, US FWS offices, Lansing

Meeting Minutes

The meeting was held at the US NRCS Office in Lansing. Introductions were made, and the meeting proceeded through the (rearranged) agenda.

Item 1 – Regional Reference Curve Update

Cyndi and **Kristine** discussed the status of the regional reference curve project. They have completed the 2 more stations since the last update, and are targeting one additional station per week until it gets too cold to continue. Including the UP sites surveyed by **Jessica**, a total of 27 sites have been surveyed. One of these locations will be surveyed with **Heather**. In general they're targeting the Clinton River, and the Sturgeon River near Wolverine. This winter they'll create curves for the UP and for southwest part of the lower peninsula.

Ralph confirmed that MDEQ will survey 5 stations before the end of the project. (Ralph and Matt Staron of MDEQ later joined Cyndi and Kristine to survey the Rabbit River.)

It was noted that the largest watershed area surveyed so far is 400 square miles.

Item 2 – Measurements at Ungaged Stream Locations

The discussion focused on surveying ungaged locations with high-quality biological communities, and possibly other ungaged locations that appear to be hydrologically and geomorphically stable. **Joe R.** confirmed that he'd produce a list of locations with "excellent" macroinvertebrate communities from the DEQ biosurvey database, by the next meeting. ***[Note from Joe – I've discovered that the MDEQ biosurvey survey database does not contain the "score" for the macroinvertebrate sample data. To identify the "excellent" sites will require examining the individual data reports – and that will take into January.]***

Joe R. also briefly described some channel stability assessment tools developed for MDEQ grantees that might identify locations for our surveys. He will make a short presentation on these tools at the next meeting.

It was agreed that the hierarchy will be:

1. gaged stations
2. stations with high-quality biological communities
3. stations that appear to be hydrologically and geomorphologically stable.

Dave said he'd perform bankfull discharge calculations for ungaged stations that will be surveyed, to check bankfull field indicators.

Item 3 – Quality Control

This discussion centered on how to handle differences in the data at re-surveyed QC stations. **John** recommended setting criteria ahead of time, and using "perfect" surveys as criteria. **Joe R.** suggested using the QC summary he prepared earlier as a guide to expected, but acceptable, differences in the data. **Kristine** will compare their data to **Jessica**'s for the UP river they both surveyed and summarize it at the next meeting.

It was agreed that QC re-surveys should "start from scratch," and not intentionally repeat transects, etc.

Item 4 – Training

It is expected that the state agencies will be subject to the same limitations on training during FY 2008. **Jim** reported that Dave Derrick of ACOE-Vicksburg gives free workshops, and might be persuaded to give one in Michigan next summer. One possibility would be a 3-day course, with 2 days in the classroom and 1 day in the field. We would provide logistics; arrange for a room, handle registration, etc. **Cyndi** suggested we might use the auditorium at the State of Michigan Library. **Jim** will try to get an agenda from Dave D.

It was decided (again) that we'd work to create training materials, similar to Sandy and Luther's Geomorph 101 course. There will probably be options for 1 and 2-day courses. One audience is agency staff, to assist with permit decisions, providing support to grantees, etc. **Kristine** will summarize some options and present them at a future meeting.

Jim also noted that he's teaching a class in geomorphology at Wayne State in the spring. It's an 8-week, 4-credit course, rolling Rosgen's 4 classes into one. He said it will be light on design and heavier on sediment transport, compared to Rosgen's classes. The likely schedule is class from 5-9 PM on Tuesdays, and field exercises for 8 hours on Saturdays.

Item 5 – Other Regional Reference Curve Projects in Michigan

Ralph led a discussion of expected 319 grant proposals (nonpoint pollution projects) that will propose to create local or regional reference curves, especially for ag drains. It was agreed that if such a project is funded the data generated needs to be of sufficient quality to include in our curve database. It was also agreed that we'll have to be careful that we don't end up with two sets of "dueling curves" – one for ag drains and one for natural streams. It's not clear whether stable ditches would be expected to have the same dimensions, etc., of natural streams with similar drainage areas. They may (the physics of sediment transport are ignorant of historic drain maintenance practices), or they may not (linear drains may constrain channel sinuosity, which will affect all the other dimensions).

Item 6 – Issues of Importance from Those in Attendance

Dave expressed concern about the amount of trash emails getting through the Stream Team filters. He also reminded us that automatic "out of office" messages are screened out if they contain "office" in the subject line.

Jessica wondered if the Dead River curve data will be added to our database. **Ralph** will look into that.

Frank noted that the new edition of the NRCS stream restoration design manual is available on CD, and he will get the link for ordering it to **Ralph**.

Next Meeting:

The next Stream Team meeting will be on Wednesday December 5, from 9:00 to 12:00 at the US FWS offices in Lansing.

(Recorded by Joe Rathbun, MDEQ)